

formed the eye, but that light itself directly formed the eye, and thus adapted it to itself.—Given a sensitive animal tissue, epidermis, and, first, some point on which the light falls is scorched and blackened, and thus made more sensitive. Black pigment spots are the most rudimentary forms in which the eyes appear. This stage having become permanent, by the same rays of the sun the cuticle is raised in a blister and serum effused, and thus the elements of a lens are produced. This is as far as even the scientific imagination of Tyndall ventures to carry us; but he infers that the rays of the sun having done so much, could go on to complete the whole mechanism of the eye. The sum and substance of all this is that the blind interactions and frictions of the various objects of nature against each other have made them fit each other as they do.

We may fairly ask any candid mind to decide whether this is a sufficient account even of such adaptations as that of the eye to light. But a careful examination of the facts will very soon show us that there are numberless instances in which it is absolutely impossible thus to convert the final cause into the physical cause, and thus say that it wrought an adaptation to itself. For instance, here is a species of butterfly (*Pieris*). Its own food is the sweet juices of the flowers. But as soon as it has arrived at the climax of its short life, it seeks out, not the petals of flowers, but the thick succulent leaves of the cabbage, or some other plant of that order, and there deposits its eggs. As far as we know, it never sees or knows its young; and it can scarcely be pretended that the wants of the young caterpillar that is to be, have been the efficient cause of the instinct of the mother which so perfectly provides for those wants. Hence the partial return in Darwin's theory to the old doctrine of chance. His laws of development by which he accounts for all these phenomena, are, then, *accidental* variation, heredity, and the survival of the *fittest*. One butterfly *chanced* to drop her eggs on a cabbage leaf; these lived, all others died. This was repeated over and over again, until the repetition created an instinct by the law of hereditary transmission. A lucky chance, happening over and over again, has thus laid the foundation of this and every other such beautiful provision in nature. This is the utmost that these boasted authorities can do in the way of accounting for the universal fact of adaptation, which confronts us at every turn, and in every part of the universe. Not even John Stuart Mill was satisfied with it. He says the induction of design is too broad to be accounted for in any such way as that, and he advises the Theist to hold on to the argument from design. We think the general verdict of common sense will agree with him in this. If the fitnesses of nature are but *chance variations*, preserved because of their accidental fitness, then the course of "creative history" should be strewn with the myriad wrecks of perishing and perished unfit variations.

It would appear that our author himself is scarcely satisfied that the argument from design is completely overthrown, for he adds a final demonstration of his own as follows: "Whatever manifests design must have had